

Capacity Strategy TT 2025 (dec-24 / dec-25)

Chapter 0: Geographical area

The geographical scope of this 2025 Capacity Strategy is defined in compliance with the decision taken in the MVP Capacity Strategy RNE group and regards the main cross-border corridor lines to Switzerland and Austria.

The Minimum Viable Product has been set up to jointly assess and test all questions related to the implementation of the first TTR Capacity Strategy within a group of TTR first wave implementers consisting of ProRail, InfraBel, ACF (observatory), DB Netz, TTR@CH (SBB Infra, BLS Infra & Trasse Schweiz), ÖBB Infra and RFI.

In this context the MVP targets Capacity Strategies among the participants that are harmonized in their structures and to the extent possible in their contents. Beyond the TTR goal of international consistency, the benefit of this approach is to offer the customer an integrated view that matches their international traffic flows.

The lines covered by the 2025 Capacity Strategy will be coherently the geographical basis for the development of the TTR project subsequent step (Capacity Model).

More in detail, the lines involved are: from the Domodossola and Luino borders to Novara and Gallarate, from Chiasso to Milano, from Brennero to Verona and from Tarvisio to Trieste. The maps below provide further detail (red coloured lines).



Chapter 1: Expected capacity of infrastructure in TT2025

This chapter includes the information available on the expected usable permanent positive (additional) and the expected permanent negative capacity impact.

Additional available capacity Further detailing provided in Appendix							
Country	Network segment	Description	Effect	Impact on Capacity *	Remark		
Italy	Luino route	Loading gauge	PC 80/410 gauge on Luino axis	2022	**		
Italy	Milano node	Technological	Increase of capacity and regularity	2023			
Italy	Gotthard and Simplon axis	750 module	Adaptation to STI	2024	**		
Italy	Chiasso – Monza	Technological	Increase of capacity and regularity	2024			
Italy	Verona – Bologna	Technological	Increase of capacity and regularity	2024			
Italy	Monza – Milano Smistamento	Technological and infrastructural	Increase of capacity and regularity	2024			
Italy	Villa Opicina – Aurisina	Technological	Increase of capacity and regularity	2025			
Italy	Gorizia branch	Infrastructural	New single track link to Slovenia	2025			

* First Annual Timetable with upgrade effect available

** Increased transportation capacity without change in available train volumes

Capacity redu	ctions are relate	Reduced available capacity d to functional reviewing of rail areas connected wit	h upgrade projects		
Line	Station	Reduced capacity	Project	Year *	
Novara-Domodossola	Novara Boschetto	Demolition of 10 tracks in Fascio Corsica and 2 tracks in Fascio Piave freight yards necessary to build the new Ro-La terminal on the same area	Novara Node upgrade	2026/2027	

* First Annual Timetable with effect available

Chapter 2: Temporary Capacity Restrictions (TCRs)

2.1 TCR general principles:

The scheduling of maintenance and upgrading works involving reductions in infrastructure capacity is carried out in compliance with the principles set out in Annex VII of Directive 2012/34, as amended by the Delegated Decision of the European Commission no. 2075/2017.

TCRs will be indicated on the ePIR RFI web-portal explaining the section and the period of execution of the works, with an estimate of the effects on the capacity (possibility of route limitations, detours, timetable changes, etc.) including the volume of traffic cancelled / diverted, in full compliance with the Delegated Decision 2017/2075, the definitive detail of which will be known with the delivery of the timetable. Any alternative routes will also be explained, in order to allow RUs to proceed coherently as early as the path request phase.

Bilateral / tri-lateral TCR-planning with international impact:

- For Swiss borders: SteCo meeting (high-level representatives of RFI & SBB-I); periodical bi-lateral harmonization meetings; constant interface between the territorial TCRs managers of SBB-I & RFI;
- For Tarvisio and Brenner borders: periodical bi (ÖBB RFI) trilateral meetings (ÖBB RFI DB); periodical ScanMed South regional TCR WG meetings for IMs coordination and IMs/RUs consultation.

Maintenance windows (IPO) principles

Maintenance windows are planned according to RFI technical needs. According to RFI Network Statement, maintenance buffer blocks (IPO maintenance windows) not requested by maintenance are released for additional capacity in order to answer RU's ad Hoc requests.

Generally, duration, number and location of maintenance windows have only minor adaptation in subsequent timetables.

Every line has periodical maintenance windows, on a weekly basis, either on daytime or night-time. The use of the IPO makes possible to avoid timetable adjustments, as they are integrated into the running timetable, guaranteeing the ordinary/extraordinary maintenance and upgrading of the infrastructure.

The (IPO) network maintenance windows are published annually in the Network Statement and can be consulted by the RUs on the RFI ePIR portal.

Clustering TCR

Whenever maintenance needs exceed what available by maintenance windows, specific additional TCR can be planned. The percentage of traffic diverted / cancelled is calculated taking into account the planned timetable, referring to the day with the greatest scheduled traffic volume within the duration of the temporary capacity restriction. If the TCR affects weekdays and holidays, the weekday with the highest scheduled traffic volume is selected; if the TCR affects only non-weekdays, the day with the highest volume of traffic is selected.

	Consecutive days	Impact on traffic (estimated traffic cancelled, re-routed or replaced by other modes of transport)
Major impact TCR	More than 30 consecutive days	More than 50% of the estimated traffic volume on a railway line per day
High impact TCR	More than 7 consecutive days	More than 30% of the estimated traffic volume on a railway line per day
Medium impact TCR	7 consecutive days or less	More than 50% of the estimated traffic volume on a railway line per day
Minor impact TCR	•	More than 10% of the estimated traffic volume on a railway line per day

Coordination & Consultation process

RFI carries out a consultation phase by sending to all Applicants/RUs and neighbouring IMs, one month before the publication, the program of network's unavailability; in case of request and if possible, an alternative hypothesis for the execution of the works is provided. RFI takes into account the comments received during the publication phase at X-24, possibly organizing ad hoc meetings. Subsequently, before the entry in force of the timetable, the IM sends to all Applicants/RUs and neighbouring IMs possibly involved the updated TCRs program for a second consultation phase, by publishing the revised TCRs programs within 18 months after coordination with neighbouring infrastructure managers and taking into account the comments received in the second consultation with Applicants through the RFI ePIR portal.

2.2 Expected Major TCRs on 2025

Regarding the lines identified by the geographical scope, the following TCRs are known at the moment of the publication of this 2025 Capacity Strategy. According to the deadlines above, further maintenance windows and adaptation needs of what listed below may be planned; these variations will be properly taken into account during the subsequent Capacity Model construction phase.

Daytime Maintenance windows (IPO) Domodossola:

- Total daytime closure of 5h in weekdays
- Summer TCRs total closure of the RFC1 lines PC80 gauge works:
 - Section Verbania Premosello (Jul-Aug 2025 40 days total closure)
 - Section Premosello Domodossola (Jul-Aug 2026 40 days total closure)
 - Section Iselle Domodossola (Jul-Aug 2026 40÷50 days total closure)
- Maintenance windows (IPO) Brenner line:
 - Total closure Fr/Sa, Sa/Su, Su/Mo, Mo/Tu, Tu/We 23:40 04:50
- Maintenance windows (IPO) Tarvisio line:
 - Southbound Track closure Mo-Tu-We-Th-Fr 07:45 10:55
 - Northbound Track closure Mo-Tu-We-Th-Fr 08:23 11:48

Chapter 3: Traffic planning principles and traffic flows

3.1. Traffic planning principles

This chapter describes the main principles for each railway line, which will be used later in the planning of elements in the Capacity Models and the Capacity Supplies.

All crosser-borders involved within this document have a specific boundary station (Domodossola, Luino, Chiasso, Brennero, Tarvisio). Timetabling on railway lines approaching those stations is assigned to a bordering IM according to long-established international agreements, therefore the bordering IMs produce separate TTRs documents (Capacity Strategy, Model and Supply) for the cross-border lines, that are harmonized as coded in the TTR process.

The following table lists for each line what categories of trains will be used in the Capacity Model:

Line		Passen	Freight trains			
	High-speed	Long- distance	Express regional	Regional	D4 P/C 80 750 m	D4 P/C 50 < 750 m
Domodossola-Premosello- Borgomanero-Novara				x	x	
Domodossola-Premosello- Arona-Sesto C.		x	x	x		x
Sesto C Gallarate		х	X	X	Х	
Arona-Oleggio				X		X
Oleggio-Novara				Х	X	
Laveno-Sesto COleggio					X	
Luino-Laveno-Gallarate				Х	Х	
Chiasso-B.Rosales					X	
Chiasso-Como-B.Rosales		X	X	х		
B.Rosales-Milano	Carlo Salaria	X	Х	X	X	
Brennero-Bolzano	1.	х	х	X	Х	
Bolzano-Verona	Х	X	X	X	X	
Tarvisio-Udine		X	X	Х	Х	
Udine-Cervignano			X	X	X	
Udine-Gorizia-Monfalcone		X	x	х	X	
Cervignano-Monfalcone- Trieste	x	x	x	x	x	

The table below lists the main parameters for passenger trains with the indication of the most common stop patterns. Different patterns could be requested by the applicants during the timetable construction phase.

Line	Stop pattern						
	High-speed	Long-distance	Express regional	Regional			
Domodossola-Premosello- Borgomanero-Novara	e de administration	n Ar Stratter		All stops			
Domodossola-Premosello- Arona-Sesto C.		Domodossola, Stresa, Arona (sometimes)	Domodossola, Premosello, Verbania, Stesa, Arona, Sesto C.	All stops			
Sesto C Gallarate		Gallarate	Sesto C., Gallarate	All stops			
Arona-Oleggio				All stops			
Oleggio-Novara				All stops			
Luino-Laveno-Gallarate				All stops			
Chiasso-Como-B.Rosales		Como S.G	Chiasso, Como S.G., Como Camerlata	All stops			
B.Rosales-Milano		Monza, Milano C.le/L.te	Seregno, Monza, Milano C.le	All stops			
Brennero-Bolzano	1 1 1 1 1 1 1 1	Brennero, Fortezza, Bressanone, Bolzano	Brennero, Colle Isarco, Vipiteno, Campo di Trens, Fortezza, Bressanone, Chiusa, Ponte Gardena, Bolzano	All stops			
Bolzano-Verona	Bolzano, Trento, Rovereto, Verona P.N.	Bolzano, Trento, Rovereto, Verona P.N.	Bolzano, Ora, Mezzocorona, Trento, Rovereto, Ala, Domegliara, Verona P.N.	All stops			
Tarvisio-Udine		Tarvisio B., Gemona, Udine	Tarvisio B., Ugovizza, Pontebba, Carnia, Venzone, Gemona, Udine	All stops (travel only Carnia- Udine)			
Udine-Cervignano			Udine, Palmanova, Cervignano				
Udine-Gorizia-Monfalcone		Udine, Gorizia, Monfalcone	Udine, Cormons, Gorizia, Sagrado, Monfalcone	All stops except Redipuglia			
Cervignano-Monfalcone- Trieste	Cervignano, Trieste Airport, Monfalcone, Trieste C.le	Cervignano, Trieste Airport, Monfalcone, Trieste C.le	Cervignano, Trieste Airport, Monfalcone, Trieste C.le	All stops			
Maximum trainset speed**	300 km/h	200 km/h	160 km/h	160 km/h			
Maximum trainset length*	400 m	400 m	250 m	250 m			

** Maximum trainset speed, not necessarily attainable on the specific line stretch

About freight trains, expected speed varies from 90 km/h to 120 km/h. Dangerous goods are usually admitted according the criteria stated in RFI Network Statement.

Cooperation with terminals takes into account the operational times they ensure; detailed timetabling is performed in an iterative way considering the time they can receive and emit trains based on their internal capacity and organization.

3.2 Traffic flows

As a general statement, on single-track corridor lines, which have a high degree of capacity saturation, a rigid path catalogue is in force, as path timetable and available channels are defined by a clock-face model that takes into account pre-determined dwell times at the cross-border stations.

On other lines, for which there is a lower level of capacity saturation, the available paths are published in pre-planned mode. A certain level of flexibility in the construction of the Timetable is admitted in order to take into account all market needs.

In compliance with RFI Network Statement, RFI general approach is to manage the freight timetable construction phase through a pre-planned path offer (Paths catalogue). The possible offer of Rolling Planning capacity, starting from the predefined and pre-built capacity catalogue, will depend on the regulatory developments currently being studied at European level as well as on the decisions taken in the RNE area regarding the implementation of the steps of the TTR project for timetable 2025.

Passenger trains timetabling is based mainly upon Framework Agreements; further market demands are taken into account as well according to the criteria stated in RFI Network Statement.

Line	Principles and elements				
Luino-Gallarate	International single track line via Ternate, via Sesto Calende single track until Sesto C., then double track from Sesto C. until Gallarate. High level of capacity saturation. Publication of capacity following criteria above summarized.				
Chiasso-Milano	International double track line. High level of capacity saturation. Publication of capacity following criteria above summarized.				
Domodossola-Novara	International single track line via Borgomanero, partially double track via Arona. High level of capacity saturation. Publication of capacity following criteria above summarized.				
Luino-Novara	International single track line until Vignale, then double track. High level of capacity saturation. Publication of capacity following criteria above summarized.				
Domodossola-Gallarate	International double track line with a High level of capacity saturation. Publication of capacity following criteria above summarized.				
Brennero-Verona	International double track line with a High level of capacity saturation. Publication of capacity following criteria above summarized.				
Tarvisio-Trieste International line mostly double track, with a High level of capacit saturation. Publication of capacity following criteria above summ					

The harmonization with neighbouring IMs, for each border section here dealt with, has been reached on the following daytime system paths per hour per direction. Further paths, not systematic, could be taken into account in timetabling construction phase.

Border-crossing system paths per hour per direction (daytime)						
		Passenger train paths per hour			Freight train paths per hour	
Border Point	High speed	Long distance	Regional express	Regional	International	Regional and Service Trains
Domodossola - CH	-	0,5	-	0,5**	3,5	Sporadic service trains
Luino - CH				0,5 0,5*	2	Sporadic service trains
Chiasso - CH	- <u>)</u>	1	1	2	4	Sporadic service trains
Brennero -AT		0,5	0,5*	1*	3	Sporadic service trains
Tarvisio - AT		Non systematic	Non systematic	Non systematic*	2	Sporadic service trains

* Domestic trains on the Italian side, ending at the border station

** Cross-bordering trains connecting Domodossola and Switzerland

Chapter 4: Validation

On 28th of June 2022 the Commercial Department of RFI approves this document and publishes on RFI website, in the dedicated section focused on TTR project.

The Head of Commercial Department Christian Colaneri

Appendix. Detail about additional available capacity in 2025

This appendix include any available information on expected permanent positive developments on capacity. It provides a list of financed projects (infrastructural or technological) which will have either a positive impact on train volumes or on the interoperability parameters, in terms of module and loading gauge, by 2025. Each project has a short description about its benefits. For more details, please refer to RFI Commercial Plan (Piano Commerciale).

1. Loading gauge 80/410 on the Luino route (Luino – Gallarate – Rho section 2022)

Maximum loading gauge made available on the Luino – Gallarate – Rho line, completing the enhancement of the itinerary from Milano to Luino, both via Sesto Calende and Ternate. The maximum gauge will therefore be available on all the lines to the Gotthard tunnel and to the terminals in Gallarate / Busto area.

 Technological upgrading of the Monza – Milano Greco Pirelli – Lambrate – Milano Smistamento line (2023)

The project involves the implementation of a new interlocking system enabling 4 minutes headways on the Milano Greco Pirelli – Milano Lambrate – Milano Smistamento section, completing the technological renewal of the entire Milano – Chiasso axis.

The technological upgrade will release increased capacity on the line as well as improved operation regularity.

3. 750 m train length on the Gotthard and Simplon access lines (2024)

The project consists of adapting passing tracks of several stations on the Gotthard and Simplon axis up to 750 meters module, to increase the number of 750 m trains admitted:

- Novara Domodossola line: Novara Boschetto*, Caltignaga*, Cressa (2023), Gozzano*, Pettenasco (2024), Gravellona Toce*, Premosello (2024), Pieve Vergonte*;
- Novara Oleggio Arona line: P.M. Cameri*, Borgo Ticino (2022), Arona (2023);
- Milano Smistamento Gallarate Arona Domodossola/Domo II line (main line): Milano Smistamento (2024), Gallarate (2023), Arona (2023), Premosello (2024), Domo II*;
- Gallarate Laveno Luino Pino Tronzano line: Pino Tronzano (2022), Luino*, Porto Valtravaglia*, Laveno M.*, Ternate (2023), Gallarate (2023);
- Oleggio Laveno line: P.M. Ispra*, Laveno M.*;
- Melzo Scalo Milano Smistamento Chiasso (main line): Melzo Scalo*, Milano Smistamento (2024), Sesto S.G. (2022), Desio*.

* stations with 750m passing tracks already available

4. Technological upgrading of Aurisina – Villa Opicina line (2025)

This project regards the renewal of the signalling system of the line with an enhancement of the number of blocking sections in order to increase the commercial capacity of the line up to standard value for a double tracks line and to improve the regularity and the reliability of the traffics. Moreover, the project include the elimination of the existing crossing levels and the adjustment of the line to the STI requirements.

5. Gorizia belt (2025)

This infrastructural upgrading consist of a new alignment providing a direct connection for trains coming from Trieste and Venezia/Monfalcone to Slovenia through Nova Gorica, bypassing Gorizia station. The length is approximately 1.4 km and the line will be electrified.